

FIGURE 1

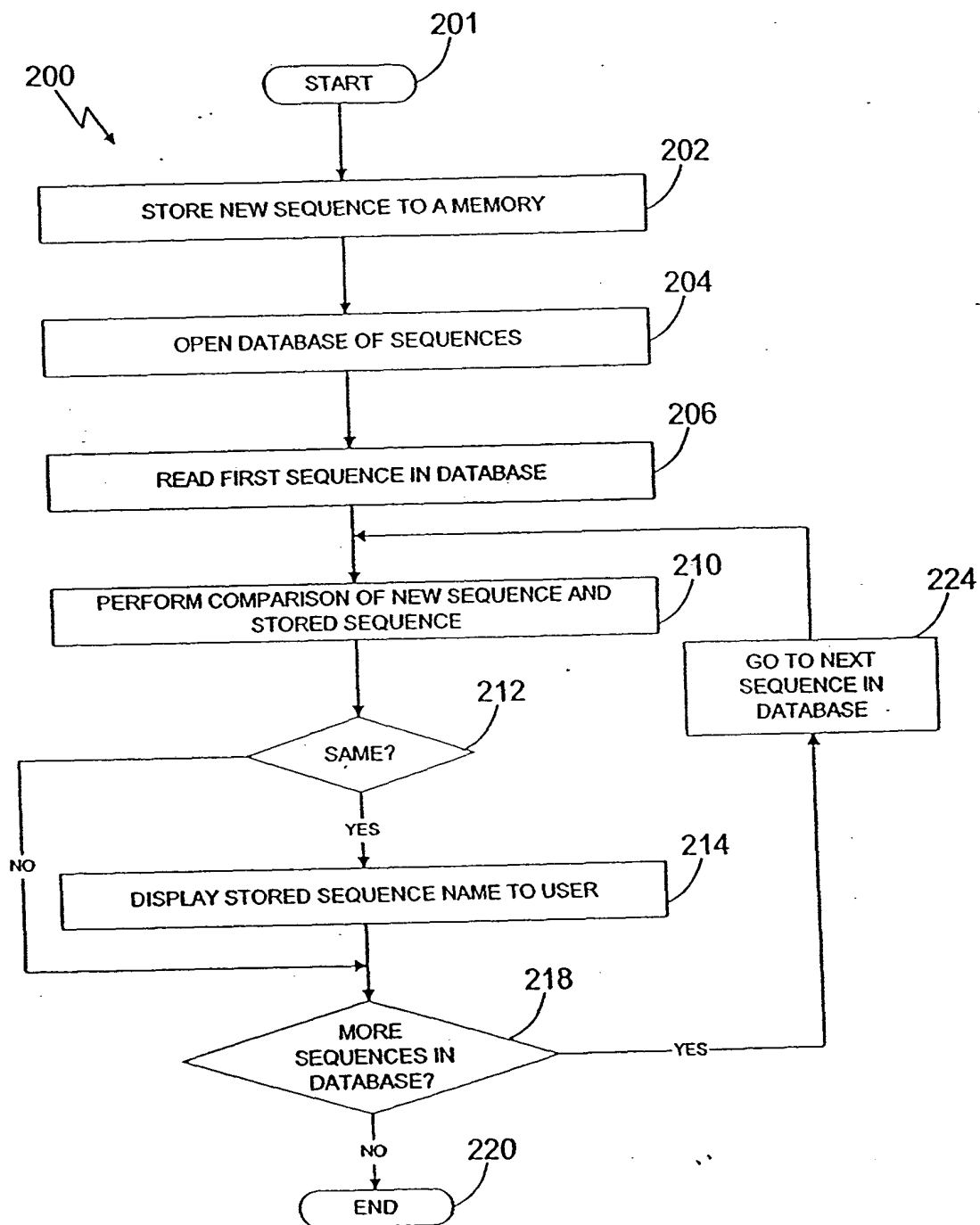


FIGURE 2

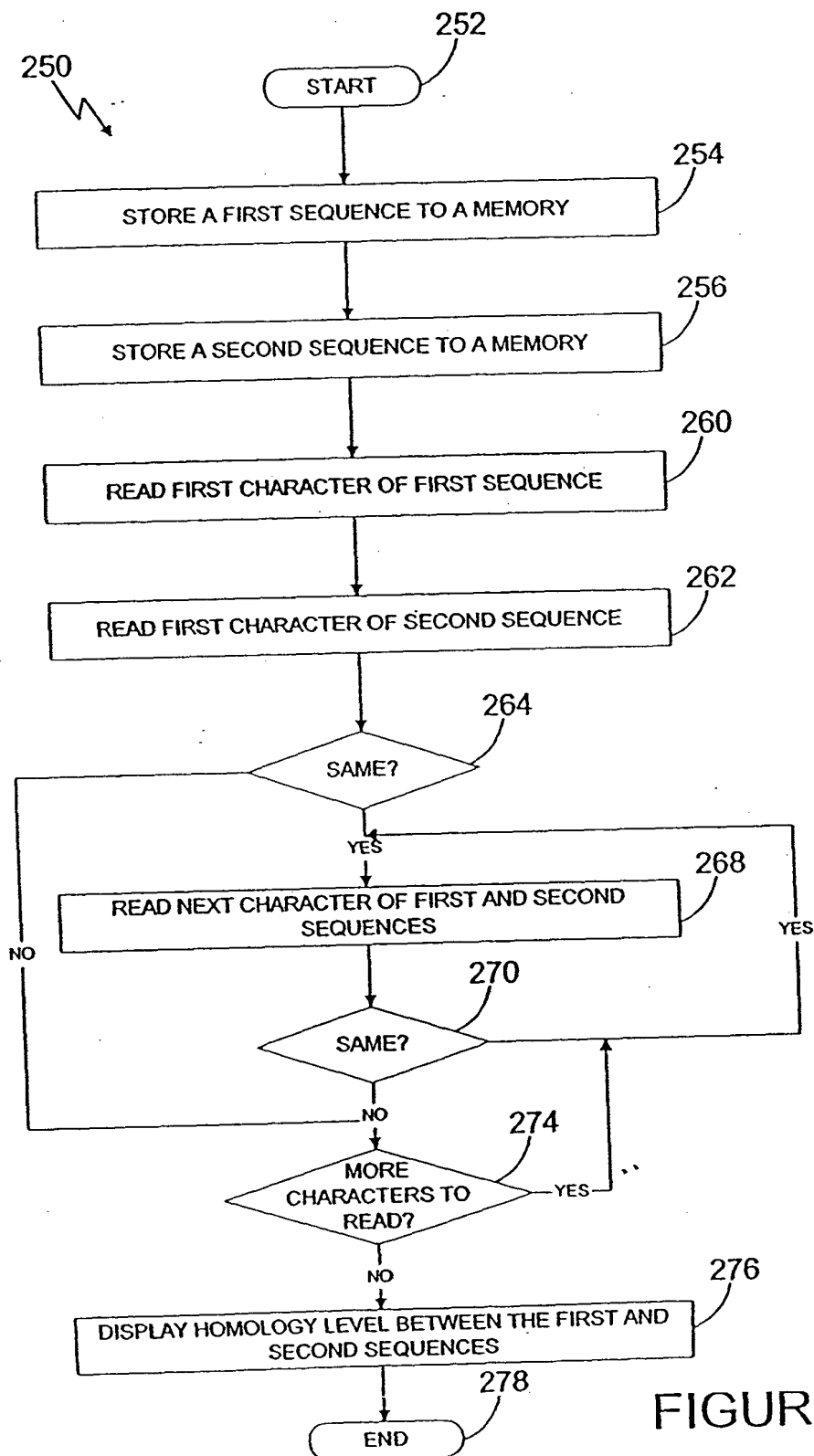


FIGURE 3

100720 0720660

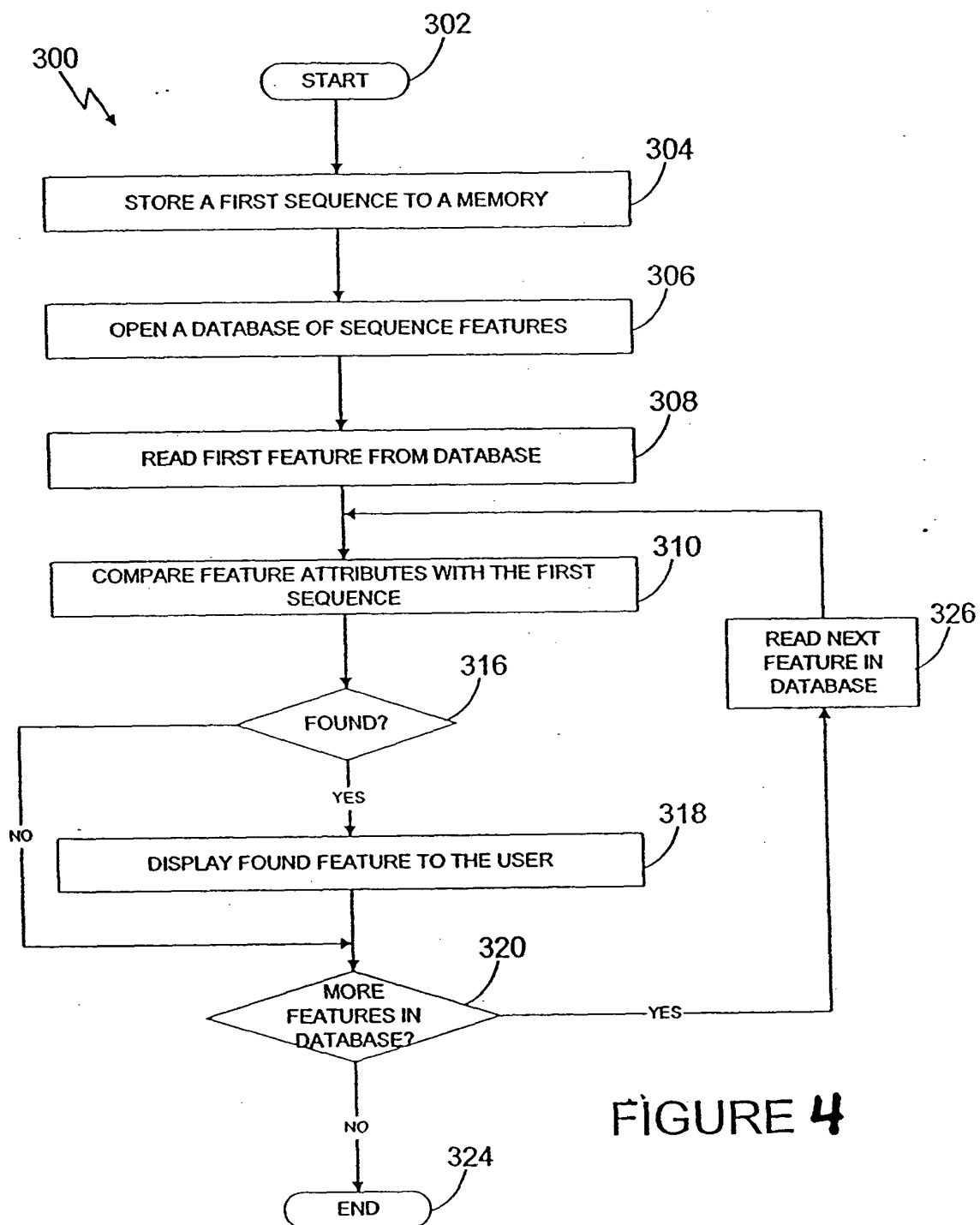


FIGURE 4

FIG. 5
Staphylothermus Marinus - F1-12LC

1	ATG TCT TTA AAC AAG CAC TCT TGG ATG GAT ATG ATA ATA TTT ATT CTC AGC TTT TCT TTC	50
1	Met Ser Leu Asn Lys His Ser Trp Met Asp Met Ile Ile Phe Ile Leu Ser Phe Ser Phe	20
6	61 CCA TTA ACA ATG ATC GCA TTA GCT ATC TCT ATG TCG TCA TGG TTT AAT ATA TGG AAT AAT	120
2	21 Pro Leu Thr Met Ile Ala Leu Ala Ile Ser Met Ser Ser Trp Phe Asn Ile Trp Asn Asn	40
12	121 GCA TTA AGC GAT CTA GGA CAT GCT GTT AAA AGC AGT GTT GCT CCA ATA TTC AAT CTA GGT	180
4	41 Ala Leu Ser Asp Leu Gly His Ala Val Lys Ser Ser Val Ala Pro Ile Phe Asn Leu Gly	60
18	181 CCT GCA ATT GGT GGG ATA CTA ATT GTT ATA GTT GGT TTA AGA AAT CTT TAT TCG TGG AGT	240
6	61 Leu Ala Ile Gly Gly Ile Leu Ile Val Ile Val Gly Leu Arg Asn Leu Tyr Ser Trp Ser	80
24	241 AGA GTT AAA GGA TCT TTA ATC ATA TCC ATG GGT GTA TTT CTT AAC TTA ATA GGG GTT TTC	300
8	81 Arg Val Lys Gly Ser Leu Ile Ile Ser Met Gly Val Phe Leu Asn Leu Ile Gly Val Phe	100
30	301 GAC GAA GTA TAT GGT TGG ATA CAT TTC CTA GTC TCA GTA TTG TTT TTC TTA TCA ATA ATA	360
10	101 Asp Glu Val Tyr Gly Trp Ile His Phe Leu Val Ser Val Leu Phe Phe Leu Ser Ile Ile	120
36	361 GCA TAT TTC ATA GCT ATA TCA ATA CTT GAC AAA TCA TGG ATA GCT GTT CTA CTA ATA ATA	420
12	121 Ala Tyr Phe Ile Ala Ile Ser Ile Leu Asp Lys Ser Trp Ile Ala Val Leu Leu Ile Ile	140
42	421 GGT CAT ATT GCA ATG TGG TAT CTA CAC TTT GCT TCA GAG ATT CCG AGA GGT GCG GCT ATT	480
14	141 Gly His Ile Ala Met Trp Tyr Leu His Phe Ala Ser Glu Ile Pro Arg Gly Ala Ala Ile	160
48	481 CCC GAG TTA TTA GCG GTA TTC TCG TTT TTA CCA TTC TAT ATA AGA GAC TAT TTT AAA TCA	540
16	161 Pro Glu Leu Leu Ala Val Phe Ser Phe Leu Pro Phe Tyr Ile Arg Asp Tyr Phe Lys Ser	180
54	541 TAC ACT AAA CGA TAG	555
18	181 Tyr Thr Lys Arg End	185

FIG. 6A
Pyrodictium - TAG11-17LC

1	ATG AAA CTC CTT GAG CCC ACA AAT ACC TCC TAC ACG CTG TTA CAG GAT TTA GCA TTG CAT	60
1	Met Lys Leu Leu Glu Pro Thr Asn Thr Ser Tyr Thr Leu Leu Gln Asp Leu Ala Leu His	20
61	TTT GCA TTT TAC TGG TTT CTG GCC GTG TAT ACG TGG TTA CCC GGT GTC CTA GTC CGG GGC	120
21	Phe Ala Phe Tyr Trp Phe Leu Ala Val Tyr Thr Trp Leu Pro Gly Val Leu Val Arg Gly	40
121	GTA GCT GTG GAC ACA GGG GTG GCT CGG GTG CCT GGG CTC GGC CGG GGT AAG AGG CTG	180
41	Val Ala Val Asp Thr Gly Val Ala Arg Val Pro Gly Leu Gly Arg Gly Lys Arg Leu	60
181	CTC CTG GCC GCT GTG GCT GTC TTG GCG CTT GTT GTG TCC GTT GTT GTC CCG GCT TAT GTG	240
61	Leu Leu Ala Ala Val Ala Val Leu Ala Leu Val Val Ser Val Val Pro Ala Tyr Val	80
241	GCG TAT AGT AGT CTG CAC CCG GAG AGC TGT CCG CCC GTT GCG CCG GAG GGG CTC ACC TAC	300
81	Ala Tyr Ser Ser Leu His Pro Glu Ser Cys Arg Pro Val Ala Pro Glu Gly Leu Thr Tyr	100
301	AAA GAG TTC AGC GTG ACC GCG GAG GAT GGC TTG GTG GTT CCG GGC TGG GTG CTG GGC CCC	360
101	Lys Glu Phe Ser Val Thr Ala Glu Asp Gly Leu Val Val Arg Gly Trp Val Leu Gly Pro	120
361	GCG GCT GGG GGC AAC CCG GTG TTC GTT TTG ATG CAC GGG TAT ACT GGG TGC CGC TCG GCG	420
121	Gly Ala Gly Gly Asn Pro Val Phe Val Leu Met His Gly Tyr Thr Gly Cys Arg Ser Ala	140
421	CCC TAC ATG GCT GTG CTG GCC CCG GAG CTC GTG GAG TGG GCG TAC CCG GTG GTT GTG TTC	480
141	Pro Tyr Met Ala Val Leu Ala Arg Glu Leu Val Glu Trp Gly Tyr Pro Val Val Phe	160
481	GAC TTC CCG GGC CAC GGG GAG AGC GGG GGC TCG ACG ACG ATT GGG CCC CCG GAG GTG CTG	540
161	Asp Phe Arg Gly His Gly Glu Ser Gly Gly Ser Thr Thr Ile Gly Pro Arg Glu Val Leu	180
541	GAT GCC CCG GCT GTG GTG GGC TAT GTC TCG GAG CCG TTC CCC GCG CGG ATA ATA TTG	600
181	Asp Ala Arg Ala Val Gly Tyr Val Ser Glu Arg Phe Pro Gly Arg Arg Ile Ile Leu	200

FIG. 6B
Pyrodictium - TAG11-17LC

601 GTG GGG TTC AGT ATG GGC GGC GCT GTA GCG ATC GTG GAG GGT GCT GGG GAC CCG CGG GTC 660
201 Val Gly Phe Ser Met Gly Gly Ala Val Ala Ile Val Glu Gly Ala Gly Asp Pro Arg Val 220

661 TAC GCG GTG GCT GCT GAT AGC CCG TAC TAT AGG CTC CCG GAC GTC ATA CCC CCG TGG CTG 720
221 Tyr Ala Val Ala Ala Asp Ser Pro Tyr Tyr Arg Leu Arg Asp Val Ile Pro Arg Trp Leu 240

721 GAG TAC AAG ACG CCG CTG CCG GGC TGG GTG GGT GTG CTG GCC GGG TTC TAC GGG AGG CTG 780
241 Glu Tyr Lys Thr Pro Leu Pro Gly Trp Val Gly Val Leu Ala Gly Phe Tyr Gly Arg Leu 260

781 ATG GCG GGC GTT GAC CTC GGC TTC GGC CCC GCT GGG GTG GAG CCG GTG GAT AAG CCG TTG 840
261 Met Ala Gly Val Asp Leu Gly Phe Gly Pro Ala Gly Val Glu Arg Val Asp Lys Pro Leu 280

841 CTG GTG GTG TAT GGG CCC CCG GAC CCG CTG GTG ACG CCG GAC GAG CCG AGG AGC CTG GCG 900
281 Leu Val Val Tyr Gly Pro Arg Asp Pro Leu Val Thr Arg Asp Glu Ala Arg Ser Leu Ala 300

901 TCC CGT AGC CCG TGT GGC CGT CTC GTC GAG GTT CCT GGG GCT GGC CAC GTG GAG GCC GTG 960
301 Ser Arg Ser Pro Cys Gly Arg Leu Val Glu Val Pro Gly Ala Gly His Val Glu Ala Val 320

961 GAT GTG CTC GGG CCG GGC CCG TAC GCA GAC ATG CTG ATA GAG CTG GCG CAC GAG GAG TGC 1020
321 Asp Val Leu Gly Pro Gly Arg Tyr Ala Asp Met Leu Ile Glu Leu Ala His Glu Glu Cys 340

1021 CCT CCG GGG GCC GGT GGC TGA 1041
341 Pro Pro Gly Ala Gly Gly End 347

FIG. 7A
***Archaeoglobus Venificus* SN P6-24LC**

1 ATG CCA TAT GTT AGG AAT GGT GGT GTA AAT ATC TAT TAT GAA CTG GTG GAT GGA CCT GAG 60
1 Met Pro Tyr Val Arg Asn Gly Gly Val Asn Ile Tyr Tyr Glu Leu Val Asp Gly Pro Glu 20

61 CCA CCA ATT GTC TTT GTT CAC GGA TGG ACA GCA AAT ATG AAT TTT TGG AAA GAG CAA AGA 120
21 Pro Pro Ile Val Phe Val His Gly Trp Thr Ala Asn Met Asn Phe Trp Lys Glu Gln Arg 40

121 CGT TAT TTT GCA GGC AGG AAT ATG ATG TTG TTT GTC GAT AAC AGA GGT CAG GGC AGG TCC 180
41 Arg Tyr Phe Ala Gly Arg Asn Met Met Leu Phe Val Asp Asn Arg Gly His Gly Arg Ser 60

181 GAT AAG CCA CTT GGA TAC GAT TTC TAC AGA TTT GAG AAC TTC ATT TCA GAT TTA GAT GCG 240
61 Asp Lys Pro Leu Gly Tyr Asp Phe Tyr Arg Phe Glu Asn Phe Ile Ser Asp Leu Asp Ala 80

241 GTT GTT AGG GAG ACT GGA GTG GAG AAA TTT GTT CTC GTC GGA CAT TCA TTC GGA ACA ATG 300
81 Val Val Arg Glu Thr Gly Val Glu Lys Phe Val Leu Val Gly His Ser Phe Gly Thr Met 100

301 ATC TCT ATG AAG TAC TGT TCG GAG TAT CCG AAT CCG GTT CTT GCT CTA ATC CTC ATA GGT 360
101 Ile Ser Met Lys Tyr Cys Ser Glu Tyr Arg Asn Arg Val Leu Ala Leu Ile Leu Ile Gly 120

361 GGT GGC AGC AGA ATA AAG CTT CTA CAC AGA ATT GGA TAT CCT TTA GCA AAG ATT CTT GCA 420
121 Gly Gly Ser Arg Ile Lys Leu Leu His Arg Ile Gly Tyr Pro Leu Ala Lys Ile Leu Ala 140

421 TCC ATT GCA TAC AAG AAG TCT TCA AGA TTG GTC GCA GAT CTT TCC TTT GGC AAA AAT GCT 480
141 Ser Ile Ala Tyr Lys Lys Ser Ser Arg Leu Val Ala Asp Leu Ser Phe Gly Lys Asn Ala 160

481 GGT GAA CTT AAA GAG TGG GGA TGG AAA CAG GCA ATG GAT TAT ACA CCC TCC TAC GTG GCA 540
161 Gly Glu Leu Lys Lys Glu Trp Gly Trp Lys Lys Gln Ala Met Asp Tyr Thr Pro Ser Tyr Val Ala 180

541 ATG TAC ACG TAC AGA ACT CTA ACG AAA GTG AAT CTT GAA AAT ATC TTG GAG AAA ATA GAC 600
181 Met Tyr Thr Tyr Arg Thr Leu Thr Lys Val Asn Leu Glu Asn Ile Leu Glu Lys Ile Asp 200

601 TGT CCA ACA CTG ATT ATC GTT GGA GAA GAG GAT GCA CTA TTG CCC GTT AGC AAA TCA GTT 660
201 Cys Pro Thr Leu Ile Ile Val Gly Glu Asp Ala Leu Leu Pro Val Ser Lys Ser Val 220

FIG. 7B
Archaeoglobus Venificus SN P6-24LC

661	GAG CTG ACG AGG AGG ATA GAA AAC TCA AAG CTT GTG ATC ATC CCA AAC TCG GGC AT TGC	720
221	Glu Leu Ser Arg Arg Ile Glu Asn Ser Lys Leu Val Ile Ile Pro Asn Ser Gly His Cys	240
721	GTA ATG CTT GAG AGT CCA AGT GAG GTT AAT AGA GCA ATG GAC GAA TTC ATT TCT TCA GCA	780
241	Val Met Leu Glu Ser Pro Ser Glu Val Asn Arg Ala Met Asp Glu Phe Ile Ser Ser Ala	260
781	CAG TTC TAA	789
261	Gln Phe End	263

FIG. 8
***Aquifax pyrophilus* - 28LC**

1 TTG AGA TTG AGG AAA TTT GAA GAG ATA AAC CTC GTT CTT TCG GGA GGA GCT GCA AAG GGC 60
 1 Leu Arg Leu Arg Lys Phe Glu Glu Ile Asn Leu Val Leu Ser Gly Gly Ala Ala Lys Gly 20
 61 ATA GCC CAC ATA GGT GTT TTG AAA GCT ATA AAC GAG CTC GGT ATA AGG GTG AGG GCT TTA 120
 21 Ile Ala His Ile Gly Val Leu Lys Ala Ile Asn Glu Leu Gly Ile Arg Val Arg Ala Leu 40
 121 AGC GGG GTG AGC GCC GGG GCA ATC GTT TCG GTC TTT TAT GCC TCA GGC TAC TCC CCT GAA 180
 41 Ser Gly Val Ser Ala Gly Ala Ile Val Ser Val Phe Tyr Ala Ser Gly Tyr Ser Pro Glu 60
 181 GGG ATG TTC AGC CTT CTG AAG AGG GTA AAC TGG CTG AAG CTG TTT AAG TTC AAG CCA CCT 240
 61 Gly Met Phe Ser Leu Leu Lys Arg Val Asn Trp Leu Lys Leu Phe Lys Phe Lys Pro Pro 80
 241 CTG AAG GGA TTG ATA GGG TGG GAG AAG GCT ATA AGA TTC CTT GAG GAA GTT CTC CCT TAC 300
 81 Leu Lys Gly Leu Ile Gly Trp Glu Lys Ala Ile Arg Phe Leu Glu Glu Val Leu Pro Tyr 100
 301 AGG AGA ATA GAA AAA CTT GAG ATA CCG ACG TAT ATA TGC GCG ACG GAT TTA TAC TCG GGA 360
 101 Arg Arg Ile Glu Lys Leu Glu Ile Pro Thr Tyr Ile Cys Ala Thr Asp Leu Tyr Ser Gly 120
 361 AGG GCT CTA TAC CTC TCG GAA GGG AGT TTA ATC CCC GCA CTT CTC GGC AGC TGT GCA ATT 420
 121 Arg Ala Leu Tyr Leu Ser Glu Gly Ser Leu Ile Pro Ala Leu Leu Gly Ser Cys Ala Ile 140
 421 CCC GGC ATA TTT GAA CCC GTT GAG TAT AAG AAT TAC TTG CTC GTT GAC GGA GGT ATA GTT 480
 141 Pro Gly Ile Phe Glu Pro Val Gly Tyr Lys Asn Tyr Leu Leu Val Asp Gly Gly Ile Val 160
 481 AAC AAC CTT CCC GTT GAG CCC TTT CAG GAA AGC GGT ATT CCC ACC GTT TGC GTT GAT GTC 540
 161 Asn Asn Leu Pro Val Glu Pro Phe Gln Glu Ser Gly Ile Pro Thr Val Cys Val Asp Val 180
 541 CTT CCC ATA GAG CCG GAA AAG GAT ATA AAG AAC ATT CTT CAC ATC CTT TTG AGG AGC TTC 600
 181 Leu Pro Ile Glu Pro Glu Lys Asp Ile Lys Asn Ile Leu His Ile Leu Leu Arg Ser Phe 200
 601 TTT CTT GCG GTC CCG TCA AAC TCC GAA AAG AGA AAG GAG TTT TGT GAC CTC GTT ATA GTT 660
 201 Phe Leu Ala Val Arg Ser Asn Ser Glu Lys Arg Lys Glu Phe Cys Asp Leu Val Ile Val 220
 661 CCT GAG CTT GAG GAG TTC ACA CCC CTT GAT GTT AGA AAA GCG GAC CAA ATA ATG GAG AGG 720
 221 Pro Glu Leu Glu Glu Phe Thr Pro Leu Asp Val Arg Lys Ala Asp Gln Ile Met Glu Arg 240
 721 GGA TAC ATA AAG GCC TTA GAG GTA CTT TCT GAA TAG 756
 241 Gly Tyr Ile Lys Ala Leu Glu Val Leu Ser Glu End 252

FIG. 9A
M117L-29L

1 ATG TTT AAT ATC AAT GTC TTT GTT AAT ATA TCT TGG CTG TAT TTT TCA GGG ATA GTT ATG 60
 1 Met Phe Asn Ile Asn Val Phe Val Asn Ile Ser Trp Leu Tyr Phe Ser Gly Ile Val Met 20
 61 AAG ACT GTG GAA GAG TAT GCG CTA CTT GAA ACA GGC GTA AGA GTG TTT TAT CGG TGT GTA 120
 21 Lys Thr Val Glu Glu Tyr Ala Leu Leu Glu Thr Gly Val Arg Val Phe Tyr Arg Cys Val 40
 121 ATC CCG GAG AAA GCT TTT AAC ACT TTG ATA ATA GGT TCA CAC GGA TTG GGG GCG CAC AGT 180
 41 Ile Pro Glu Lys Ala Phe Asn Thr Leu Ile Ile Gly Ser His Gly Leu Gly Ala His Ser 60
 181 GGA ATC TAC ATT AGT GTT GCT GAA GAA TTT GCT AGG CAC GGA TTT GGA TTC TGC ATG CAC 240
 61 Gly Ile Tyr Ile Ser Val Ala Glu Glu Phe Ala Arg His Gly Phe Cys Met His 80
 241 GAT CAA AGG GGA CAT GGG AGA ACG GCA AGC GAT AGA GAA AGA GGG TAT GTG GAG GGC TTT 300
 81 Asp Gln Arg Gly His Gly Arg Thr Ala Ser Asp Arg Glu Arg Gly Tyr Val Glu Gly Phe 100
 301 CAC AAC TTC ATA GAG GAT ATG AAG GCC TTC TCC GAT TAT GCC AAG TGG CGC GTG GGA GGT 360
 101 His Asn Phe Ile Glu Asp Met Lys Ala Phe Ser Asp Tyr Ala Lys Trp Arg Val Gly Gly 120
 361 GAC GAA ATA ATA TTG CTA GGA CAC AGT ATG GGC GGG CTG ATA GCG CTC TTA ACA GTT GCA 420
 121 Asp Glu Ile Ile Leu Leu Glu Gly His Ser Met Gly Gly Leu Ile Ala Leu Leu Thr Val Ala 140
 421 ACT TAT AAA GAA ATC GCC AAG GGA GTT ATC GCG CTA GCC CCG GCC CTC CAA ATC CCC TTA 480
 141 Thr Tyr Lys Glu Ile Ala Lys Gly Val Ile Ala Leu Ala Pro Ala Leu Gln Ile Pro Leu 160
 481 ACC CCG GCT AGA AGA CTT GTT CTA AGC CTC GCG TCA AGG CTT GCC CCG CAT TCT AAG ATC 540
 161 Thr Leu Gln Arg Arg Leu Val Leu Ser Leu Ala Ser Arg Leu Ala Pro His Ser Lys Ile 180
 541 ACC TTA CAA AGG AGA TTG CCG CAG AAA CCA GAG GGT TTT CAA AGA GCA AAA GAT ATA GAA 600
 181 Thr Leu Gln Arg Arg Leu Pro Gly Lys Pro Glu Gly Phe Gln Arg Ala Lys Asp Ile Glu 200
 601 TAC AGT CTG AGT GAA ATA TCA GTC AAG CTC GTG GAC GAA ATG ATT AAA GCA TCA TCT ATG 660
 201 Tyr Ser Leu Ser Glu Ile Ser Val Lys Leu Val Asp Glu Met Ile Lys Ala Ser Ser Met 220
 661 TTG TGG ACC ATA GCA GGG GAA ATT AAT ACT CCC GTC CTG CTT ATT CAT GGG GAA AAA GAC 720
 221 Phe Trp Thr Ile Ala Gly Glu Ile Asn Thr Pro Val Leu Leu Ile Lys Ala Ser Ser Met 240

FIG. 7 B
M171L-29L.

721	AAT GTC ATA CCT CCG GAG GCG AGC AAA AAA GCC TAC CAA TTA ATA CCT TCA TTC CCT AAA	780
241	Asn Val Ile Pro Pro Glu Ala Ser Lys Lys Ala Tyr Gln Leu Ile Pro Ser Phe Pro Lys	
781	GAG TTG AAA ATA TAC CCC GAT CTT GGA CAC AAC TTG TTT TTT GAA CCA GGC GCG GTG AAA	840
261	Glu Leu Lys Ile Tyr Pro Asp Leu Gly His Asn Leu Phe Phe Glu Pro Gly Ala Val Lys	280
841	ATC GTC ACA GAC ATT GTA GAG TGG GTT AAG AAT CTA CCC AGG GAA AAT CCT TAA	894
281	Ile Val Thr Asp Ile Val Glu Trp Val Lys Asn Leu Pro Arg Glu Asn Pro End	298

Thermococcus CL-2-30LC

1	ATG GAG GTT TAC AAG GCC AAA TTC GGC GAA GCA AAG CTC GGC TGG GTC GTT CTG GTT CAT	60
1	Met Glu Val Tyr Lys Ala Lys Phe Gly Glu Ala Lys Leu Gly Trp Val Val Leu Val His	20
61	GGC CTC GGC GAG CAC AGC GGA AGG TAT GGA AGA CTG ATT AAG GAA CTC AAC TAT GCC GGC	120
21	Gly Leu Gly Glu His Ser Gly Arg Tyr Gly Arg Leu Ile Lys Glu Leu Asn Tyr Ala Gly	40
121	TTT GGA GTT TAC ACC TTC GAC TGG CCC GGC CAC GGG AAG AGC CCG GGC AAG AGA GGG CAC	180
41	Phe Gly Val Tyr Thr Phe Asp Trp Pro Gly His Gly Lys Ser Pro Gly Lys Arg Gly His	60
181	ACG AGC GTC GAG GAG GCG ATG GAA ATC ATC GAC TCG ATA ATC GAG GAG ATC AGG GAG AAG	240
61	Thr Ser Val Glu Glu Ala Met Glu Ile Ile Asp Ser Ile Ile Glu Glu Ile Arg Glu Lys	80
241	CCC TTC CTC TTC GGC CAC AGC CTC GGT GGT CTA ACT GTC ATC AGG TAC GCT GAG ACG CGG	300
81	Pro Phe Leu Phe Gly His Ser Leu Gly Gly Leu Thr Val Ile Arg Tyr Ala Glu Thr Arg	100
301	CCC GAT AAA ATA CGG GGA TTA ATA GCT TCC TCG CCT GCC CTC GCC AAG AGC CCG GAA ACG	360
101	Pro Asp Lys Ile Arg Gly Leu Ile Ala Ser Ser Pro Ala Leu Ala Lys Ser Pro Glu Thr	120
361	CCG GGC TTC ATG GTG GCC CTC GCG AAG TTC CTT GGA AAG ATC GCC CCG GGA GTT GTT CTC	420
121	Pro Gly Phe Met Val Ala Leu Ala Lys Phe Leu Gly Lys Ile Ala Pro Gly Val Val Leu	140
421	TCC AAC GGC ATA AAG CCG GAA CTC CTC TCG AGG AAC AGG GAC GCC GTG AGG AGG TAC GTT	480
141	Ser Asn Gly Ile Lys Pro Glu Leu Leu Ser Arg Asn Arg Asp Ala Val Arg Arg Tyr Val	160
481	GAA GAC CCA CTC GTC CAC GAC AGG ATT TCG GCC AAG CTG GGA AGG AGC ATC TTC GTG AAC	540
161	Glu Asp Pro Leu Val His Asp Arg Ile Ser Ala Lys Leu Gly Arg Ser Ile Phe Val Asn	180
541	ATG GAG CTG GCC CAC AGG GAG GCG GAC AAG ATA AAA GTC CCG ATC CTC CTT CTG ATG GGC	600
181	Met Glu Leu Ala His Arg Glu Ala Asp Lys Ile Lys Val Pro Ile Leu Leu Ile Gly	200
601	ACT GGC GAT GTA ATA ACC CCG CCT GAA GGC TCA CGC AGA CTC TTC GAG GAG CTG GCC GTC	660
201	Thr Gly Asp Val Ile Thr Pro Pro Glu Gly Ser Arg Arg Leu Phe Glu Glu Leu Ala Val	220
661	GAG AAC AAA ACC CTG AGG GAG TTC GAG GGG GCG TAC CAC GAG ATA TTT GAA GAC CCC GAG	720
221	Glu Asn Lys Thr Leu Arg Glu Phe Glu Gly Ala Tyr His Glu Ile Phe Glu Asp Pro Glu	240

721 TGG GCC GAG GAG TTC CAC GAA ACA ATT GTT AAG TGG CTG GTT GAA AAA TCG TAC TCT TCG 780
241 Trp Ala Glu Glu Phe His Glu Thr Ile Val Lys Trp Leu Val Glu Lys Ser Tyr Ser Ser 260

781 GCT CAA TAA 789
261 Ala Gln End 263

FIG. 11
Aquifex VF5-34LC

1 TTGATT GGC AAT TTG AAA TTG AAG AGG TTT GAA GAG GTT AAC TTA GTT CTT TCG GGA GGG 60
 1 Leu Ile Gly Asn Leu Lys Leu Lys Arg Phe Glu Val Asn Leu Val Leu Ser Gly Gly 20
 61 GCT GCC AAG GGT ATC GCC CAT ATA GGT GTT TTA AAA GCT CTG GAA GAG CTC GGT ATA AAG 120
 21 Ala Ala Lys Gly Ile Ala His Ile Gly Val Leu Lys Ala Leu Glu Glu Leu Gly Ile Lys 40
 121 GTA AAG AGG CTC AGC GGG GTA AGT GCT GGA GCT ATC GTT TCC GTC TTT TAC GCT TCG GGC 180
 41 Val Lys Arg Leu Ser Gly Val Ser Ala Gly Ala Ile Val Ser Val Phe Tyr Ala Ser Gly 60
 181 TAC ACT CCC GAC GAG ATG TTA AAA CTC CTG AAA GAG GTA AAC TGG CTC AAA CTT TTT AAG 240
 61 Tyr Thr Pro Asp Glu Met Leu Lys Leu Lys Glu Val Asn Trp Leu Lys Leu Phe Lys 80
 241 TTC AAA ACA CCG AAA ATG GGC TTA ATG GGG TGG GAG AAG GCT GCA GAG TTT TTG GAA AAA 300
 81 Phe Lys Thr Pro Lys Met Gly Leu Met Gly Trp Glu Lys Ala Ala Glu Phe Leu Glu Lys 100
 301 GAG CTC GGA GTT AAG AGG CTG GAA GAC CTG AAC ATA CCA ACC TAT CTT TGC TCG GCG GAT 360
 101 Glu Leu Gly Val Lys Arg Leu Glu Asp Leu Asn Ile Pro Thr Tyr Leu Cys Ser Ala Asp 120
 361 CTG TAC ACG GGA AAG GCT CTT TAC TTC GGC AGA GGT GAC TTA ATT CCC GTG CTT CTC GGA 420
 121 Leu Tyr Thr Gly Lys Ala Leu Tyr Phe Gly Arg Gly Asp Leu Ile Pro Val Leu Leu Gly 140
 421 AGT TGT TCC ATA CCC GGG ATT TTT GAA CCA GTT GAG TAC GAG AAT TTT CTA CTT GTT GAC 480
 141 Ser Cys Ser Ile Pro Gly Ile Phe Glu Pro Val Glu Tyr Glu Asn Phe Leu Leu Val Asp 160
 481 GGA GGT ATA GTG AAC AAC CTG CCC GTA GAA CCT TTG GAA AAG TTC AAA GAA CCC ATA ATC 540
 161 Gly Gly Ile Val Asn Asn Leu Pro Val Glu Pro Leu Glu Lys Phe Lys Glu Pro Ile Ile 180
 541 GGG GTA GAT GTG CTT CCC ATA ACT CAA GAA AGA AAG ATT AAA AAT ATA CTC CAC ATC CTT 600
 181 Gly Val Asp Val Leu Pro Ile Thr Gln Glu Arg Lys Ile Lys Asn Ile Leu His Ile Leu 200
 601 ATA AGG AGC TTC TTT CTG GCG GTT CGT TCC AAT TCG GAA AAG AGA AAG GAG TTC TGC AAC 660
 201 Ile Arg Ser Phe Phe Leu Ala Val Arg Ser Asn Ser Glu Lys Arg Lys Glu Phe Cys Asn 220
 661 GTA GTT ATA GAA CCT CCC CTT GAA GAG TTC TCT CCT CTG GAC GTA AAT AAG GCG GAC GAG 720
 221 Val Val Ile Glu Pro Pro Leu Glu Phe Ser Pro Leu Asp Val Asn Lys Ala Asp Glu 240
 721 ATA TTC TGC GGG GAT ATG AGA GCA CTT TAA 750
 241 Ile Phe Cys Gly Asp Met Arg Ala Leu End 250

FIG. 12B
Teredinibacter - 42L

721	CTT GAT GAG TTA AAC AAC TAT TTC ATT CCC CGC TAC ACC GGC TTC AAC TCA GTC TCC GAA	780
241	Leu Asp Glu Leu Asn Asn Tyr Phe Ile Pro Arg Tyr Thr Gly Phe Asn Ser Val Ser Glu	260
781	TAC TTC AAA AGT TAC ACG CTC ACC GGG CAG AAG CTC GCG TTT CTC AAC TGC CCC AGT TAC	840
261	Tyr Phe Lys Ser Tyr Thr Leu Thr Tyr Thr Gly Gln Lys Leu Ala Phe Leu Asn Cys Pro Ser Tyr	280
841	ATT CTG GCA GCT GGC GAC GAC CCA ATA ATT CCA GCA TCC GAC TTT CAG AAA ATA GCC AAG	900
281	Ile Leu Ala Ala Gly Asp Asp Pro Ile Ile Pro Ala Ser Asp Phe Gln Lys Ile Ala Lys	300
901	CCT GCG AAT CTG CAC ATA ACA GTA ACG CAA CAA GGT TCT CAT TGC GCA TAC CTG GAA AAC	960
301	Pro Ala Asn Leu His Ile Thr Val Thr Gln Gln Gly Ser His Cys Ala Tyr Leu Glu Asn	320
961	CTG CAT AAA CCT AGT GCT GCC GAC AAA TAT GCG GTG AAA TTA TTT GGA GCC TGT TGA	1017
321	Leu His Lys Pro Ser Ala Ala Asp Lys Tyr Ala Val Lys Leu Phe Gly Ala Cys End	339

Archeoglogus fulgidas VC16 - 16MC1

ATG CTT GAT ATG CCA ATC GAC CCT GTT TAC TAC CAG CTT GCT GAG TAT	Met Leu Asp Met ⁵ Pro Ile Asp Pro ¹⁰ Val ¹⁵ Tyr ³⁰ Tyr ⁴⁵ Gln ⁶⁰ Leu ⁷⁵ Ala ⁹⁰ Glu ¹⁰⁵ Tyr ¹²⁰
TTC Phe Asp ²⁰ Ser ³⁵ Leu ⁵⁰ Ile ⁶⁵ Arg ⁸⁰ Ala ⁹⁵ Ile ¹¹⁰ Arg ¹²⁵	AGT CTG CCG AAG TTC GAC CAG CAG TCC TCG GCC AGA GAG TAC
AGG GAG GCG ATA AAT CGA ATA ⁴⁰ Ile ⁵⁵ Arg ⁷⁰ Arg ⁸⁵ Asn ¹⁰⁰ Ile ¹¹⁵ Arg ¹³⁰	GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG
CAG Gln ⁵⁰ His ⁶⁵ Asp ⁸⁰ Val ⁹⁵ Arg ¹¹⁰ Val ¹²⁵ Val ¹⁴⁰ Val ¹⁵⁵	CAT GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG GAG
AAC Gln ⁶⁵ Asn ⁸⁰ Gly ⁹⁵ Val ¹¹⁰ Val ¹²⁵ Val ¹⁴⁰ Val ¹⁵⁵	GAC ATC Ile ⁴⁰ Asp ⁵⁵ Val ⁷⁰ Val ⁸⁵ Val ¹⁰⁰ Val ¹¹⁵ Val ¹³⁰ Val ¹⁴⁵
TCG Ser ⁸⁵ His ¹⁰⁰ Val ¹¹⁵ Val ¹³⁰ Val ¹⁴⁵ Val ¹⁶⁰	GAC GCC TTA TGC AGG AGA AYY GCG AGA CTT TCA AAC TCT ACC
GTA Val ¹⁰⁰ Val ¹¹⁵ Val ¹³⁰ Val ¹⁴⁵ Val ¹⁶⁰ Val ¹⁷⁵	TCC GTG Ser ⁴⁰ Val ⁵⁵ Asp ⁷⁰ Asp ⁸⁵ Val ¹⁰⁰ Val ¹¹⁵ Val ¹³⁰ Val ¹⁴⁵
CCA Ala ¹¹⁵ Val ¹³⁰ Val ¹⁴⁵ Val ¹⁶⁰ Val ¹⁷⁵ Val ¹⁹⁰	GTT TAT CAT TGC Tyr ⁴⁰ Tyr ⁵⁵ Cys ⁷⁰ Cys ⁸⁵ Cys ¹⁰⁰ Cys ¹¹⁵ Cys ¹³⁰ Cys ¹⁴⁵
GAG Glu ¹⁴⁵ Glu ¹⁶⁰ Glu ¹⁷⁵ Glu ¹⁹⁰ Glu ²⁰⁵ Glu ²²⁰	CTG AGG Ile ⁴⁰ Arg ⁵⁵ Arg ⁷⁰ Arg ⁸⁵ Arg ¹⁰⁰ Arg ¹¹⁵ Arg ¹³⁰ Arg ¹⁴⁵
GCG Ala ¹⁶⁵ Gly ¹⁸⁰ Gly ¹⁹⁵ Gly ²¹⁰ Gly ²²⁵ Gly ²⁴⁰	CGG AAT CTT GCC CCG CCG GCG GCG GCG GCG GCG GCG GCG GCG

FIG. 13B
Archeoglossus fulgidus VC16 - 16MC1

GGA Gly	GAA Glu	GAT Asp	TTC Phe	ATA Ile	AAG Lys	CAT His	GAA Gln	ATT Ile	CTA Leu	ACT Ile	TAC Tyr	CCC Pro	GTT Val	GTG Val	AAC Asn
TTT Phe	GTA Val	GCC Ala	CCC Pro	ACA Thr	CCA Pro	TCG Ser	CTT Leu	CTG Leu	GAG Glu	TTT Phe	GGA Gly	GAG Glu	GGG Gly	CTG Leu	TGG Trp
ATT Ile	CTC Leu	GAC Asp	CAG Gln	AAG Lys	ATA Ile	ATG Met	AGT Ser	TGG Trp	TTC Phe	TCG Ser	GAG Glu	CAG Gln	TAC Tyr	TTC Phe	TCC Ser
AGA Arg	GAG Glu	GAA Glu	GAT Aso	AAG Lys	TTC Phe	AAG Asn	CCC Pro	CTC Leu	GCC Ala	TCC Ser	GTA Val	ATC Ile	TTT Phe	GCG Ala	GAC Asp
CTT Leu	GAG Glu	AAC Asn	CTA Leu	CCT Pro	CCT Pro	GTG Ala	CTG Leu	ATC Ile	ATA Ile	ACC Thr	GCC Ala	GAA Glu	TAC Tyr	GAC Asp	CCG Pro
CTG Leu	AGA Arg	GAT Asp	GAA Glu	GGA Gly	GAT Val	GTT Val	TTC Phe	GGG Gly	CAG Gln	ATG Met	CTG Leu	AGA Arg	AGA Arg	GCC Ala	GGT Gly
GTT Val	GAG Glu	GCG Ala	AGC Ser	ATC Ile	GTC Val	AGA Arg	TAC Tyr	AGA Arg	GGC Gly	GTG Val	CTT Leu	CAC His	GGA Gly	TTC Phe	ATC Ile
AAT Asn	TAC Tyr	TAT Tyr	CCC Pro	GTG Val	CTG Leu	AAG Lys	GCT Ala	GCG Ala	AGG Arg	GAT Asp	GCG Ala	ATA Ile	AAC Asn	CAG Gln	ATT Ile
GCC Ala	GCT Ala	CTT Leu	CTT Leu	GTG Val	TTC Phe	GAC Asp	TAG								

FIG. 14A
Sulfolobus Solfataricus P1 8LC1

ATG CCC CTA GAT CCT AGA ATT AAA AAG TTA CTA GAA TCA GCT CTT ACT	
Met Pro Leu Asp Pro Arg Ile Lys ⁵ Lys ¹⁰ Lys ¹⁵ Leu Leu Glu Ser Ala Leu Thr	
ATA CCA ATT GGT AAA GCC CCA GTA GAA GAG GTA AGA AAG ATA TTT AGG	
Ile Pro Ile ²⁰ Gly Lys Ala Pro ²⁵ Val Glu Glu Val ³⁰ Arg Lys Ile Phe Arg	
CAA TTA GCG TCG GCA GCT CCT CCC AAA GTC GAA GTT GGA AAA GTA GAA GAT	
Gln Leu Ala Ser Ala Ala ⁴⁰ Pro Lys Val Glu Val ⁴⁵ Gly Lys Val Glu Asp	
ATA AAA ATA CCA GGC AGT AGA ACC GTT ATA AAC GCT AGA GTG TAT TTT	
Ile Lys ⁵⁰ Ile Pro Gly Ser ⁵⁵ Thr Val ⁶⁰ Ile Asn Ala Arg Val Tyr Phe	
CCG AAG AGT AGC GGT CCT TAT TGT GTT CTA GTG TAT CTT CAT GGA GGC	
Pro Lys ⁶⁵ Ser Ser Gly Pro Tyr Gly Val ⁷⁰ Leu Val Tyr Leu His Gly Gly	
GGT TTT GTA ATA GGC GAT GTG GAA TCT TAT GAC CCA TTA TGT AGA GCA	
Gly Phe Val Ile ⁸⁰ Ile Gly Asp Val Glu ⁸⁵ Ser Tyr Asp ⁹⁰ Pro Leu Cys Arg Ala	
ATT ACA AAT GCG TGC AAT TGC GTT GTA GTT TCA GTG GAC TAT AGG TTA	
Ile Thr Asn Ala Cys Asn ¹⁰⁰ Asn ¹⁰⁵ Cys Val Val ¹¹⁰ Ser Val Asp Tyr Arg Leu	
GCT CCA GAA TAC AAG TTT CCT TCT GCA GTT ATC GAT TCA TTT GAC GCT	
Ala Pro ¹¹⁵ Glu Tyr Lys Lys Phe ¹²⁰ Ser Ala Val ¹²⁵ Ile Asp Ser Phe Asp Ala	
ACT AAT TGG GTT TAT AAC AAT TTA GAT AAA TTT GAT GGA AAG ATG GGA	
Thr Asn Trp Val Tyr ¹³⁰ Asn ¹³⁵ Asn Leu Asp Lys Phe ¹⁴⁰ Asp Gly Met Gly	
GTT GCG ATT GCG GGA GAT AGT GCT GGA AAT TTG GCA GCG GTT GTA	
Val Ala Ile Ala ¹⁴⁵ Asp Ser Ale ¹⁵⁰ Gly ¹⁵⁵ Asn ¹⁶⁰ Leu Ala ¹⁶⁵ Val	

GCT CTT CTT TCA AAG GGT AAA ATT AAT TTG AAG TAT CAA ATA CTG GTT
Ala Leu Leu Ser Lys Gly Lys Ile Asn Leu Lys Tyr Gln Ile Leu Val
165

TAC CCA GCG GTA AGT TTA GAT AAC GTT TCA AGA TCC ATG ATA GAG TAC
Tyr Pro Ala Val Ser Leu Asp Asn Val Ser Arg Ser Met Ile Glu Tyr
180

TCT GAT GGG TTC TTC CTT ACC AGA GAG CAT ATA GAG TGG TTC GGT TCT
Ser Asp Gly Phe Phe Leu Thr Arg Glu His Ile Glu Trp Phe Gly Ser
195

CAA TAC TTA CGA AGC CCT GCA GAT TTG CTA GAC TTT AGG TTC TCT CCA
Gln Tyr Leu Arg Ser Pro Ala Asp Leu Leu Asp Phe Arg Phe Ser Pro
210

ATT CTG GCG CAA GAT TTC TTA CCT CCA GCC GGC TAT ATA ATA ACA
Ile Leu Ala Gln Asp Phe Phe Leu Leu Pro Pro Ala Tyr Ile Ile Thr
225

GCA GAA TAC GAT CCA Pro GTA AGG GAT Gly Gln GAA GCG Ala Tyr GCA Asn Lys
Ala Glu Tyr Asp Pro Leu Arg Arg Asp Thr

CTA CTA CAA GCT GGA GTC TCA GTT ACT AGT GTG AGA Phe TTT AAC AAC GTT
Leu Leu Gln Ala Gly Val Ser Val Thr Thr Ser Val Arg Arg CAA Gln GAT
245

ATA CAC GGA TTC Phe CTC TCA TTC Phe Phe TTT CCG Pro Leu Met Glu GAG AGA Arg Asp
Ile His Gly Phe Leu Ser Ser Phe Phe Thr Leu Met Glu GAG AGA Arg Asp
260

GCT ATA GGT CTG ATA GGG TCT GTG TTA AGA CGA GTA TTT Phe TAT GAT AAA
Ala Ile Gly Lru Ile Ile Ile Gly Ser Ile Ile Arg Val Phe Tyr Asp Lys
275

ATT TAA
Ile
305